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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,954	05/20/2004	Hiroshi Yamada	1232-5421	8070
27123	7590	11/15/2005		
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER HSIEH, SHIH WEN	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/849,954

Applicant(s)

YAMADA ET AL.

Examiner

Shih-wen Hsieh

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8, 10, 12 and 13 is/are rejected.
- 7) ☒ Claim(s) 5, 7, 9 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1-5-05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on May 23, 2003. It is noted, however, that applicant has not filed a certified copy of the priority application as required by 35 U.S.C. 119(b).

Examiner just found a cover letter for the priority document, the body of the same is not found. Appropriate action is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 6, 10, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirabayashi et al. (US pat. No. 5,493,319).

In regard to:

Claim 1:

Hirabayashi et al. teach:

An ink jet printing apparatus to form an image by using a print head capable of ejecting ink from its ejection openings, the printing apparatus comprising:

wiping means (401, figs. 2 and 4) for wiping an ejection opening formed face (1, figs. 1 and 3) of the print head in which the ejection openings (12, figs. 1 and 3) are formed;

preliminary ejection means (12, figs. 1 and 3) for ejecting ink not contributing to an image forming from the ejection openings of the print head, refer to col. 13, lines 3-37; and

modifying means for changing, according to event history information of the print head, the number of ink droplets to be ejected by the preliminary ejection means following a wiping operation of the wiping means, refer to figs. 7A step S3, which is explain in fig. 8. In fig. 8, steps S61, S63, S65 and S67. In steps S 65 and S67, preliminary ejection modes B and C are performed respectively. Step S 61 is a wiping operation. Again, back to fig. 7A, step S7 is a wiping operation, and step S 33 is preliminary ejection mode A. For modes A, B and C, please refer to col. 13, lines 3-37. In each of the mode, the driving frequency to the electro-thermal conversion element, which is the element to heat up the ink to form bubble and ejected out it of the nozzle in the form of ink droplet, is varied. For instance, in mode A the frequency is 1KHz, while in mode B, it is 4KHz. It is known that the lower the driving frequency, the number of ejected ink droplet is less than when the driving frequency is higher. Also, figs. 11 and 12 indicate different preliminary ejection A or B after wiping operation. Every steps before "wiping" is the event history information of the print head.

Claim 2:

Hirabayashi et al. further teach:

wherein the event history information of the print head is a cumulative count of wiping operations of the wiping means, refer to step S 63, fig. 8, col. 15, line 56 to col. 16, line 6.

Claim 3:

Hirabayashi et al. further teach:

wherein the modifying means increases the number of ink droplets to be ejected by the preliminary ejection means as the cumulative count of wiping operations increases, refer to col. 13, lines 16-24, specially, lines 21-24, in which, the discharge velocity of the ink fluid is higher, i.e., with a same time period, higher ejecting energy ejects more ink droplet than lower energy, which drives ink fluid at a lesser velocity, and leads to lesser ink droplets.

Claim 6:

Hirabayashi et al. further teach in their fig. 8:

wherein the event history information of the print head is a cumulative time in which the print head is mounted in the ink jet printing apparatus, refer to step S 51, col. 15, lines 6-12.

Claim 10:

Hirabayashi et al. further teach in their fig. 6:

memory means (803, ROM) for storing the event history information of the print head, refer to col. 11, lines 13-17;

wherein the modifying means changes, according to the event history information stored in the memory means, the number of ink droplets to be ejected by the preliminary ejection means following the wiping operation of the wiping means, refer to the rejections to claims 4 (dot count), 6 (cumulative time) and 8 (elapsed time from previous wiping) discussed above.

Claim 12:

A print head recovery device to perform a recovery operation to maintain an ink ejection performance of a print head in good condition, the print head being capable of ejecting ink from its ejection openings, the print head recovery device comprising:

wiping means for wiping an ejection opening formed face of the print head in which the ejection openings are formed;

preliminary ejection means for ejecting ink not contributing to an image forming from the ejection openings of the print head; and

modifying means for changing, according to event history information of the print head, the number of ink droplets to be ejected by the preliminary ejection means following a wiping operation of the wiping means.

Rejection:

The recitations of this claim are similar to those in claim 1 and is rejected on the basis as set forth for claim 1 discussed above.

Claim 13:

A print head recovery method for performing a recovery operation to maintain an ink ejection performance of a print head in good condition, the print head being capable

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of ejecting ink from its ejection openings, the print head recovery method comprising the steps of:

using wiping means for wiping an ejection opening formed face of the print head in which the ejection openings are formed and preliminary ejection means for ejecting ink not contributing to an image forming from the ejection openings of the print head; and

changing, according to event history information of the print head, the number of ink droplets to be ejected by the preliminary ejection means following a wiping operation of the wiping means.

Rejection:

The method steps in this claim are deemed to be made inherent by the functions of the structure in the combination discussed above for claims 1 and 12.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirayabashi et al. in view of Hanabusa et al. (US Pat. No. 6,299,278 B1).

In regard to:

Claim 4:

The device of Hirayabashi et al. DIFFERS from claim 4 in that it does not teach: wherein the event history information of the print head is a cumulative printed dot number representing a cumulative number of ink droplets ejected from the print head.

Hanabusa et al. teach in their fig. 10 a control scheme, in which, at step S 1002 a droplet count is counted against a threshold value after a printing job is started, if the threshold value is exceeded, then a wiping action is executed at step S 1003, refer to col. 11, line 61 to col. 12, line 7.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Hirayabashi et al. to include a dot count and threshold dot count value, and a comparison between them deciding whether a wiping action is to be conducted as taught by Hanabusa et al. for the purpose of providing print head wiping at appropriate moments during printing.

Claim 8:

The device of Hirayabashi et al. DIFFERS from claim 8 in that it does not teach: wherein the event history information of the print head is a time which elapses from a wiping operation of the wiping means to a start of a printing operation on a printing medium.

Hanabusa et al. teach in their fig. 10 a control scheme, in which, at step S 1001 is a check of whether a predetermined threshold time elapsed from a previous wiping has been reached, if the answer is "yes", then a wiping action is conducted at step S 1003, refer to col. 11, line 61 to col. 12, line 7.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Hirayabashi et al. to include a predetermined time period from a previous wiping action, and compared with this time period, if it is exceeded, then a wiping action is taken such that print head is wiped at appropriate moments during printing.

Allowable Subject Matter

6. Claims 5, 7, 9 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

In regard to:

Claim 5:

The primary reason for the allowance of claim 5 is the inclusion of the limitation of wherein the modifying means increases the number of ink droplets to be ejected by the preliminary ejection means as the cumulative printed dot number increases. It is this limitation found in this claim, as it is in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 7:

The primary reason for the allowance of claim 7 is the inclusion of the limitation of wherein the modifying means increases the number of ink droplets to be ejected by the preliminary ejection means as the cumulative print head mounting time increases. It is this limitation found in this claim, as it is in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 9:

The primary reason for the allowance of claim 9 is the inclusion of the limitation of wherein the modifying means decreases the number of ink droplets to be ejected by the preliminary ejection means as the elapsed time increases. It is this limitation found

in this claim, as it is in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 11:

The primary reason for the allowance of claim 11 is the inclusion of the limitation of wherein the event history information is information related to a degradation of repellency of the ejection opening formed face of the print head. It is this limitation found in this claim, as it is in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-wen Hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 7:30AM -5:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on 571-272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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SHIH-WEN HSIEH
PRIMARY EXAMINER


Shih-wen Hsieh
Primary Examiner
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SWH


Nov. 10, 2005